

What is claimed is:

- 5 1. A device for severing and carrying a web in a web winding operation, comprising:
- (a) a first blade⁶⁷ and a second blade⁶³, the first blade and second blade being operably connected and spaced apart a predetermined distance to form a gap⁸¹, wherein the first and second blades are adapted to bear against the surface of a web, further wherein the gap is sized so as to receive a severing mechanism between the first blade and second blade in severing a web; and
- 10 (b) a unitary elongated mandrel⁶⁵ connected to at least the first blade, the unitary elongated mandrel comprising a plurality of spaced pins⁶¹ projecting from and integrated into the unitary elongated mandrel, the pins being positioned along the length of the unitary elongated mandrel, the pins being configured for piercing and carrying a severed web.
- 15 2. The device of claim 1 further wherein the device is mounted within a bedroll¹⁷, the bedroll being capable of rotating.
3. The device of claim 1 further comprising a spacer⁶⁴ between the first blade and second blade.

4. The device of claim 2 wherein the unitary elongated mandrel includes a plurality of pins along its length that are configured to project from the exterior surface of the bedroll.

5. The device of claim 2, wherein the device is adapted to be movable from a first position in which the pins are held beneath the outer circumference of the bedroll, to a second position in which the pins project from the outer surface of the bedroll.

6. The device of claim 5 in which the pins are oriented in substantially the same direction.

7. The device of claim 2 wherein the device is further connected to a clamp.

8. The device of claim 7 in which the unitary elongated mandrel is configured to be replaced by mounting the unitary elongated mandrel upon the front side of the clamp.

9. The device of claim 1 in which the unitary elongated mandrel comprises multiple pins, the pins having a long axis, the pins being substantially parallel to each other along their long axis, further wherein the elongated pin assembly is mounted to the blade assembly by a connector, therein the connector is aligned generally perpendicular to the long axis of the pins when the connector is secured to the elongated pin assembly, facilitating the mounting of the blade assembly upon the front side of the clamp.

10. The device of claim 9 in which the distance between the first blade and second blade is between about 0.03 and about 0.07 inches.

11. The device of claim 10 in which the distance between the first blade and second blade is about 0.05 inches.

12. A web rewinder having a frame and a bedroll mounted for rotation within the frame, the rewinder providing an integrated and unitary mandrel within the bedroll, further comprising:

(a) a means for rotating a bedroll;

5 (b) a means for feeding a web to the bedroll for rotational travel of the web in partial wrapping engagement with said bedroll;

10 (c) an assembly capable of severing a web mounted upon a roll for separating a web of material, the assembly further comprising at least a pair of blades adjacent to and separated by a gap, the pair of blades being operably connected to each other and held in fixed relation to said spacer, and

(d) an integrated, unitary elongated mandrel operably connected to the pair of blades, the mandrel comprising in part a plurality of spaced pins positioned along the length of the mandrel.

13. A web severing and carrying apparatus including a unitary elongated mandrel that comprises a pin assembly projecting therefrom, comprising:

5 a bedroll rotatably supported on a frame for rotation about an axis,
the bedroll having an outer surface for contacting a web,

a unitary elongated mandrel with a pin assembly projecting
therefrom, the pin assembly being movably mounted on the bedroll, the
pin assembly being movable between a first position in which the pin
assembly is inward of the outer surface of the winding roll and a second
10 position in which the pin assembly projects beyond the outer surface of
the bedroll for contact with the web,

wherein the pin assembly comprises at least two blades
configured for severing a web, the assembly further comprising an
integrated assembly with a unitary mandrel having multiple spaced pins
15 along its length, in which the pins are configured for piercing and carrying
the web.

14. The apparatus of claim 13 in which the pin assembly further
comprises pads adapted for disengaging the web from said pins.

15. The apparatus of claim 14 in which the mandrel is configured
to be mountable and removable from said assembly as a one-piece unit.

16. The apparatus of claim 15 in which the mandrel is adapted for
replacement by mounting upon the front side of a clamp.

17. The apparatus of claim 13 in which the pin assembly
comprises pins having a long axis, the pins being substantially parallel to
each other along their long axis, further wherein the pin assembly is
mounted to the blade assembly by a connector, therein the connector is

18. The apparatus of claim 17 in which the apparatus further
wherein the distance between the first blade and second blade is
between about 0.03 and about 0.07 inches.

19. The blade assembly of claim 17 in which the distance between the first blade and second blade is about 0.05 inches.

20. In connection with a web winding apparatus, a unitary elongated mandrel, said mandrel further comprising a plurality of integrated pins projecting from the mandrel, in which the pins are adapted for piercing and carrying a web.

21. The assembly of claim 20 in which the number of pins projecting from the mandrel is at least about 10.

22. The assembly of claim 20 in which the number of pins projecting from the mandrel is at least about 20.

23. The assembly of claim 20 in which the number of pins projecting from the mandrel is at least about 30.

24. The assembly of claim 20 in which the number of pins projecting from the mandrel is about one pin per three inches of web in the cross direction.

25. A method of severing and carrying a paper sheet in a papermaking process, the method comprising:

(a) providing a bedroll, the bedroll having an interior space and an outer circumferential surface, the bedroll having within its interior space a first blade and a second blade, the first blade and second blade being oriented generally parallel to each other and spaced apart a predetermined distance to form a gap there-between;

(b) providing a chopper blade in close proximity to the bedroll,

(c) transferring a sheet over the outer circumferential surface of the bedroll and across the first and second blades, thereby crossing said gap;

(d) providing a unitary elongated mandrel having an integrated structure, the mandrel having a plurality of integrated pins projecting outward from the mandrel, the mandrel being mounted within the bedroll;

(e) projecting at least one pin of said unitary elongated mandrel from the interior space of the bedroll to a position beyond the outer circumferential surface of the bedroll;

(f) piercing the sheet with at least one pin;

(g) moving the chopper blade to the gap between the first and second blades of the bedroll, thereby severing the sheet into a downstream portion and an upstream portion;

(h) carrying with at least one pin the upstream portion of the sheet along the rotary path of the bedroll;

(i) joining the upstream portion of the sheet with a core; and

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(j) releasing the pin or pins from the upstream portion of the sheet.

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